Defense Acquisition University
21st Annual Symposium

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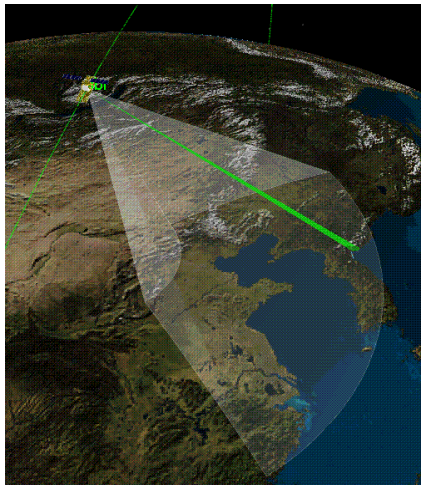
The Joint Staff

What is Network Centric Operations?

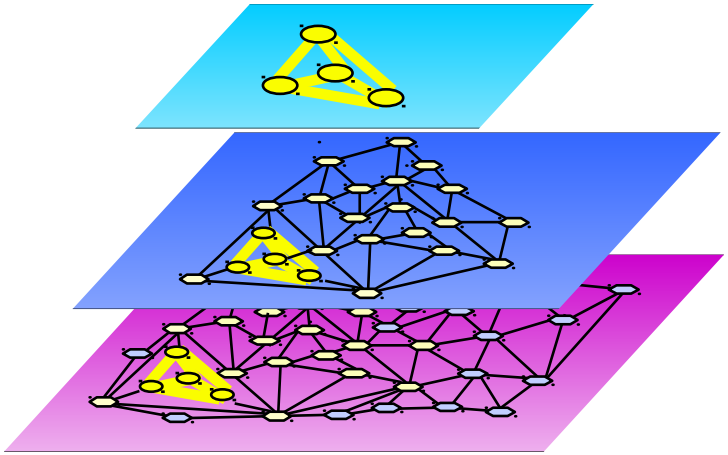
- A "networked" Joint Force that is linked and synchronized in time and purpose
- Decisive combat power derived from a fully connected and interoperable force
  - Shared battlespace awareness
  - Faster decision cycles… increased tempo
    - Information, knowledge, & decision superiority
    - Revised methods of conducting operations / C2?
  - Reduced sensor-to-shooter kill chain time
  - Massed "effects" rather than forces

The "Playing" Field



Sensors

Shooters

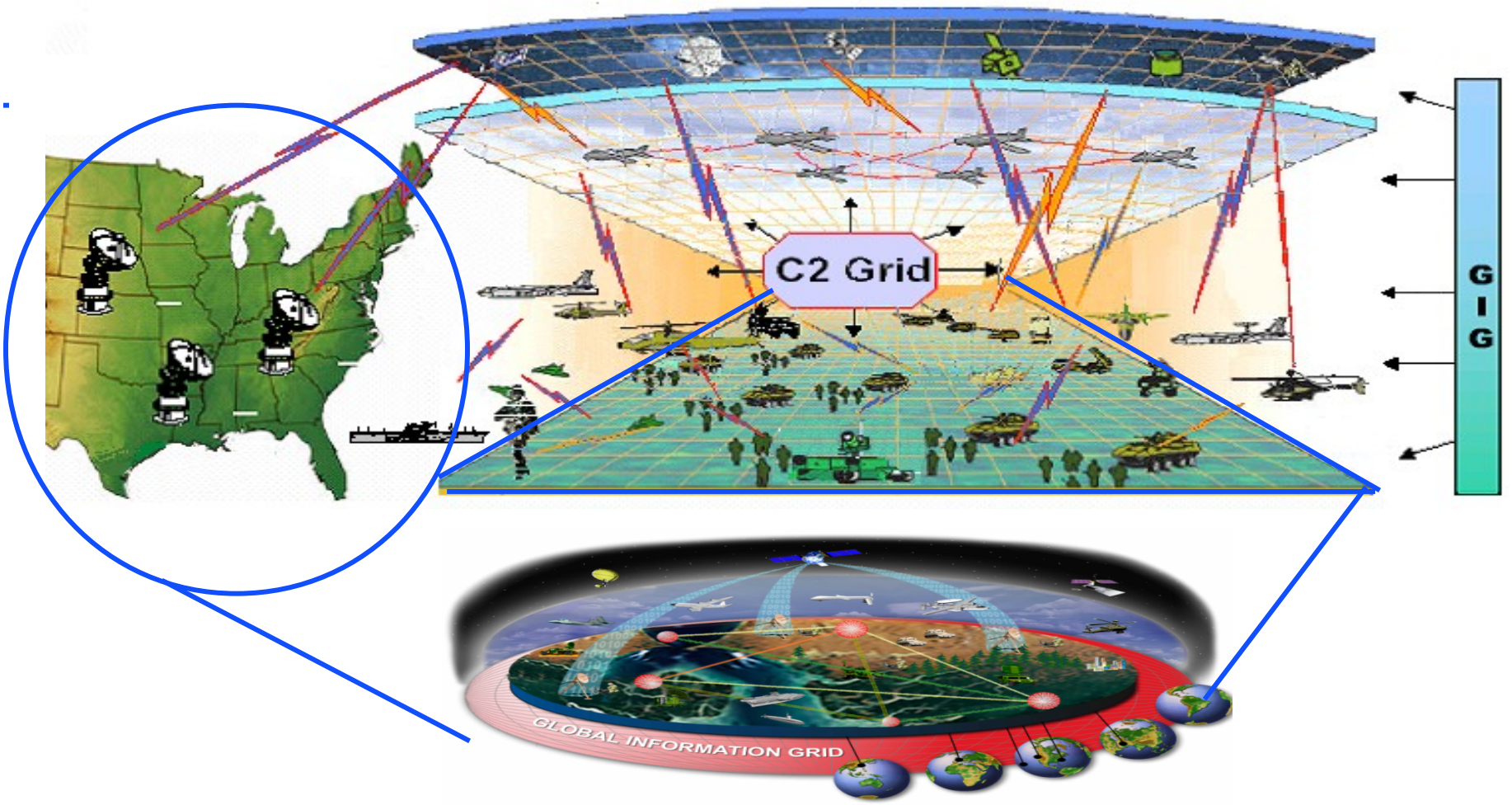


Networks

Command & Control

People

The Global Information Grid

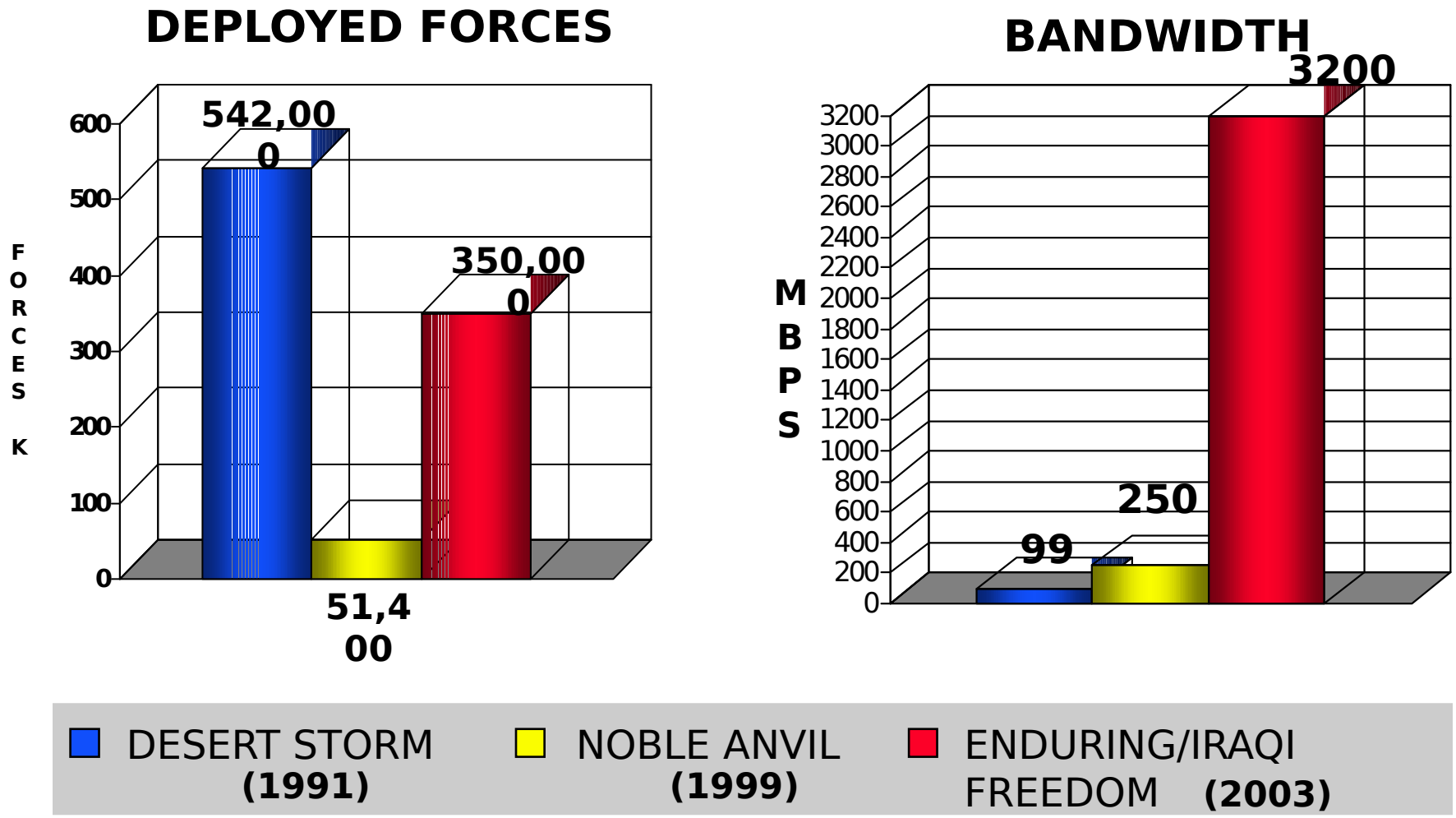


Every battlespace entity is a potential node

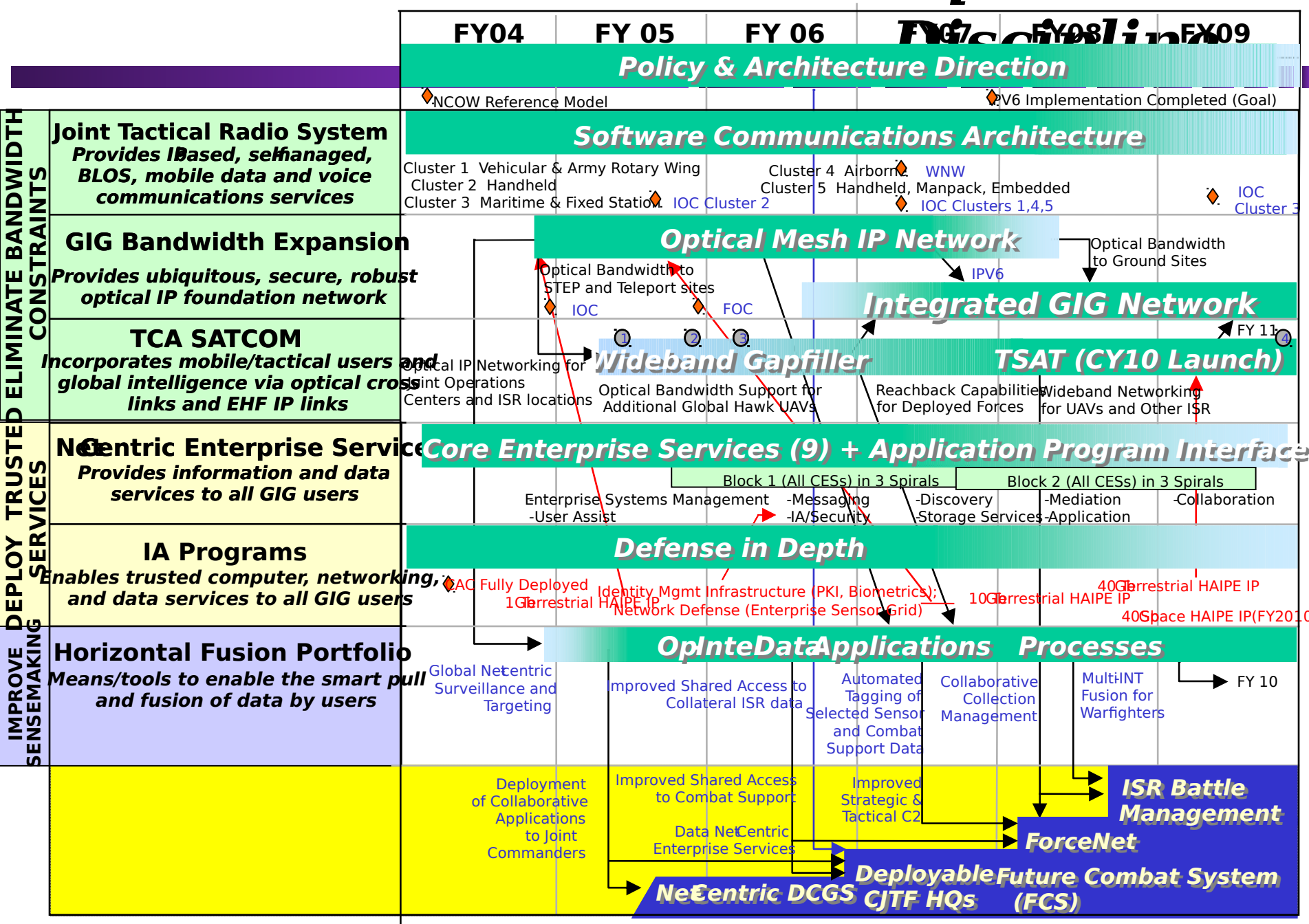
Potential Impacts of a Network Centric Force

- **What are the implications to doctrine, joint force organization, and the conduct of warfare of the Task, Post, Process, Use (TPPU)?**
- **Unity of Effort vs. Unity of Command**
- **How does the Joint Force Commander "manage critical information" in a "sea" of data?**
- **Is decentralized execution feasible where higher level commanders and staffs will have near real time situational awareness and access to information?**
  - **Blurring of the lines between strategic / tactical level**
- **How much to do we automate the "kill chain"?**
  - **Do will allow C2 systems to clear fire in close proximity to troops or civilians?**
  - **Impact on current processes for fire support coordination?**
- **Impact of JTRS, where every platform is a potential node? Component vs. JFC positioning of network nodes to support objectives?**
- **How do we manage the network? Does the J-6/G-6 direct the placement of weapon systems to support the network?**

Forces vs. Bandwidth



Acquisition

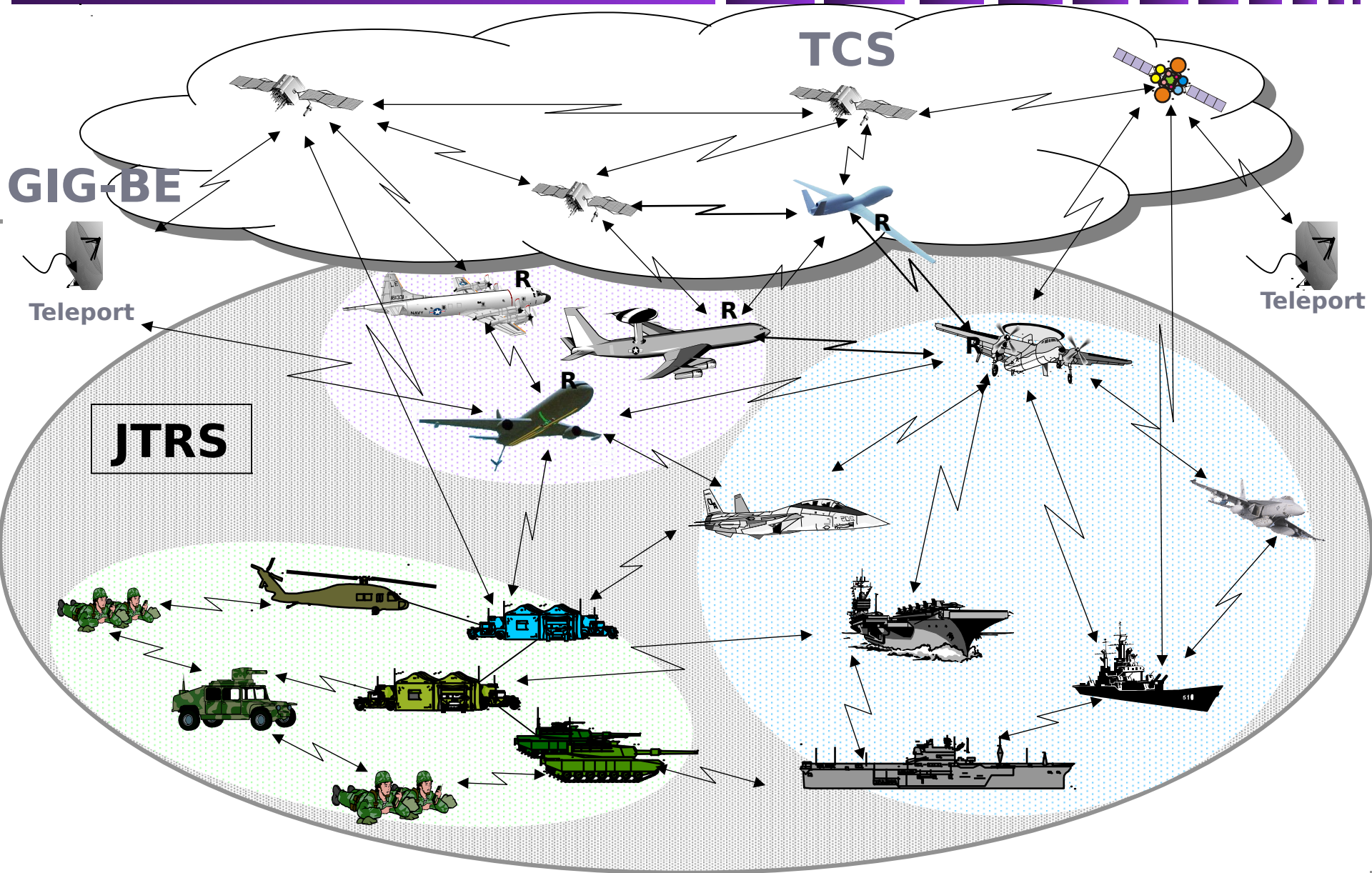

FY04
FY 05
FY 06
FY07
FY08
FY09
Policy & Architecture Direction
NCOW Reference Model
IPV6 Implementation Completed (Goal)
ELIMINATE BANDWIDTH CONSTRAINTS
Joint Tactical Radio System
Provides IP based, self managed, BLOS, mobile data and voice communications services
Software Communications Architecture
Cluster 1 Vehicular & Army Rotary Wing
Cluster 2 Handheld
Cluster 3 Maritime & Fixed Station
IOC Cluster 2
Cluster 4 Airborne
WNW
Cluster 5 Handheld, Manpack, Embedded
IOC Clusters 1,4,5
IOC Cluster 3
GIG Bandwidth Expansion
Provides ubiquitous, secure, robust optical IP foundation network
Optical Mesh IP Network
Optical Bandwidth to Ground Sites
IPV6
Optical Bandwidth to STEP and Teleport sites
IOC
FOC
Integrated GIG Network
FY 11
TCA SATCOM
Incorporates mobile/tactical users and global intelligence via optical cross links and EHF IP links
Wideband Gapfiller
TSAT (CY10 Launch)
Optical IP Networking for Joint Operations Centers and ISR locations
Optical Bandwidth Support for Additional Global Hawk UAVs
Reachback Capabilities for Deployed Forces
Wideband Networking for UAVs and Other ISR
DEPLOY TRUSTED SERVICES
Net Centric Enterprise Services
Provides information and data services to all GIG users
Core Enterprise Services (9) + Application Program Interfaces
Block 1 (All CESs) in 3 Spirals
Block 2 (All CESs) in 3 Spirals
Enterprise Systems Management
-User Assist
-Messaging
-IA/Security
-Discovery
-Storage Services
-Mediation
-Application
-Collaboration
IA Programs
Enables trusted computer, networking, and data services to all GIG users
Defense in Depth
CAC Fully Deployed
1Gb Terrestrial HAIPE IP
Identity Mgmt Infrastructure (PKI, Biometrics); Network Defense (Enterprise Sensor Grid)
10Gb Terrestrial HAIPE IP
40Gb Terrestrial HAIPE IP
40Gb Space HAIPE IP(FY2010)
IMPROVE SENSEMAKING
Horizontal Fusion Portfolio
Means/tools to enable the smart pull and fusion of data by users
Op Inte Data Applications Processes
Global Net-centric Surveillance and Targeting
Improved Shared Access to Collateral ISR data
Automated Tagging of Selected Sensor and Combat Support Data
Collaborative Collection Management
Multi-INT Fusion for Warfighters
FY 10
Deployment of Collaborative Applications to Joint Commanders
Improved Shared Access to Combat Support
Data Net-Centric Enterprise Services
Improved Strategic & Tactical C2
ISR Battle Management
ForceNet
Deployable CJTF HQs
Future Combat System (FCS)
Net-Centric DCGS

Satellite Communications

- **Advanced Extremely High Frequency System (AEHF)**
- **Wideband Gapfiller System (WGS)**
- **Transformational C S**

Must minimize program slippages and synchronize terminal/space segment fielding

Joint Tactical Radio System (JTRS)



Deployable Joint Warfighting

Deployable Joint C4 and C2

- **Standing Joint Force Headquarters (SJFHQ)**
- **Deployable Joint Command and Control (DJC2)**

Multinational Information Sharing

- **Multinational Information Sharing (MNIS) is consistently a top Combatant Command challenge**
- **Technology and lessons learned can also apply to Interagency**
- **There is no perfect solution – but we need to reduce the 84+ programs and initiatives**
- **Coalitions are here to stay**
  - **Need secure, timely information exchange**

Future warfighting will be joint and coalition – relying on Interagency participants!

Information Assurance

We need to:

- **Refine our security posture and TTPs across the board**
- **Field smart tools to alert us on network anomalies, intrusions, attacks and provide forensics**
- **Reduce timelines for complying with Information Assurance Vulnerability Assessments (IAVAs)**
  - **A risk taken by one is a vulnerability assumed by all**
- **Improve training standards for everyone who uses, operates and maintains networks**
- **Continually assess and prepare for future threats**

As the network becomes our center of gravity, computer network defense becomes our Achilles heel

Conclusion

- **We are at the brink of a major change in warfighting**
  - **C4 is the critical enabler to network centric operations**
- **We need to face the many challenges ahead together**
- **Regardless of technology it all comes down to people**
- **The end result will be increased lethality, increased precision and reduced vulnerabilities**

Questions?

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